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A LECTURE ON THE PRESERVATION OF HEALTH.

By T. GARNETT, M. D.

Member of the Royal Medical, Phyſical, and Natural Hiſtory Societies of Edinburgh; the Literary and Philoſophical Society of Mancheſter; the Medical Society of London; the Royal Iriſh Academy, and Profeſſor of Phyſics and Philoſophy in Anderſon's Inſtitution, Glaſgow.

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TO ERASMUS DARWIN, M. D.

The Ornament of Science,

And the Friend of Mankind,

This Lecture,

As a ſmall Teſtimony

Of Reſpect and Eſteem,

Is inſcribed

By

THE AUTHOR.

PREFACE.

MOST medical gentlemen will, it is ſuppoſed, agree that the greater part of the numerous train of diſeaſes to which their patients are ſubject, have been brought on by improper conduct and imprudence. That this conduct often proceeds from ignorance of its bad effects, may be preſumed; for though it cannot be denied that ſome perſons are perfectly regardleſs with reſpect to their health, yet the

the great maſs of mankind are too ſenſible of the enjoyment and loſs of this greateſt of bleſſings, to run headlong into danger, with their eyes open.

It was with the hope of making the laws of life more generally known, and better underſtood, and from thence deducing ſuch rules for the preſervation of health, as would be evident to every capacity, that the author was induced to deliver this lecture. It has been honoured with the attention of numerous audiences, in ſome of the moſt populous towns in England, where it has generally been read for the benefit of charitable inſtitutions.

The author flatters himſelf, that beſides the benefit produced by his humble endeavours to ſerve theſe inſtitutions, thoſe *endeavours have not totally failed in the grand object of preſerving health; and with the hope that the influence of the precepts here given, may be farther extended, he has concurred in the ideas of thoſe who have adviſed the publication of this lecture.*

It is to be feared, that notwithſtanding all which can be done, diſeaſe will continue to be a heavy tax, which civilized ſociety muſt pay for its comforts; and the valetudinarian will often be tempted to envy the ſavage the ſtrength and ſoundneſs his conſtitution. Much however may be done towards the prevention of a number of diſeaſes. If this lecture ſhould contribute to the attainment of ſo deſirable an end, it will afford the higheſt gratification to the author.

The firſt part of the lecture is the ſub-

ſtance of an eſſay which was read by the author before the Royal Medical Society of Edinburgh, intended as a defence of the general principles of the ſyſtem of Dr. Brown, whoſe pupil he then was. It was, according to cuſtom, tranſcribed into the books of the ſociety, and the public have now an opportunity of judging how far Dr. Girtanner, in his firſt eſſay publiſhed in the Journal de Phyſique, about two years after, in which he gives the theory as his own, without the leaſt acknowledgement to the much injured and unfortunate author of the Elementa Medicinæ, *has borrowed from this eſſay.*

In public lectures, novelty is not to be expected, the principal object of the lecturer being to place in a proper point of view, what has been before diſcovered. The author has therefore freely availed himſelf of the

the labours of others, particularly of the publications of the philanthropic Dr. Beddoes, which he takes this opportunity of acknowledging.

A LECTURE, &c.

THE greateſt bleſſing we enjoy is health, without it, wealth, honors, and every other conſideration, would be inſipid, and even irkſome; the preſervation of this ſtate therefore, naturally concerns us all. In this lecture, I ſhall not attempt to teach you to become your[illegible] phyſicians, for when the barriers o[illegible]h are once broken down, and diſeaſe has eſtabliſhed itſelf, it requires the deepeſt attention, and an accurate acquaintance with the extenſive ſcience of medicine, to combat it; to attain this knowledge demands the labour of years. But, a majority of at leaſt ſome ſpecies of them, paſs the winter in a torpid ſtate, which has all the appearance of death; now heat, if applied to dead matter, will only produce motion, or chemical combination; but if it be applied to the ſnake, let us ſee what will be the conſequence; the reptile firſt begins to move, and opens its eyes and mouth; when the heat has been applied for ſome time, it crawls about in ſearch of food, and performs all the functions of life. Here then, dead matter, when applied to a living body, produces living functions; for if the heat had not been applied, the ſnake would have continued ſenſeleſs, and apparently lifeleſs. In more perfect animals, the effects produced by the action of dead matter on them, are more numerous, and are different in different living ſyſtems, but are in general the following—ſenſe and motion in almoſt all animals, and in many the power of thinking, and other affections of the mind. The powers, or dead matters, which are applied, and which produce theſe functions, are chiefly, heat, food, and air. The proof that theſe powers do produce the living functions, is in my opinion a very convincing one, namely, that when their actions are ſuſpended, the living functions ceaſe; take away, for inſtance, heat, air, and food from animals, and they ſoon become dead matter; and it is not neceſſary that an animal ſhould be deprived of all thoſe to put a ſtop to the living functions; if any one of them be taken away, the body ſooner or later becomes dead matter: it is found by experience, that if a man be deprived of air, he dies in about t[illegible]ee or four minutes; for inſtance, i[illegible]e be immerſed under water, if h[illegible]rived of heat, or in other wor[illegible]d to a very ſevere degree [illegible] likewiſe ſoon dies; or if [illegible] deprived of food, his death is e[illegible] certain, though more ſlow. It [illegible]ufficiently evident then, that the living functions are owing to the action of theſe external powers upon the body. What I have here ſaid, is not confined to animals, but the living functions of vegetables are likewiſe cauſed by the action of dead matter upon them. The dead matters, which by their action produce theſe functions, are principally heat, moiſture, light, and air. It clearly follows therefore, from what I have ſaid, that living bodies muſt have ſome property different from dead matter, which renders them capable of being acted upon by theſe external powers, ſo as to produce the living functions; for if they had not, the only effects which theſe powers could produce, would be mechanical, or chemical. Though we know not exactly in what this property conſiſts, or in what manner it is acted on, yet we ſee, that [illegible] bodies are poſſeſſed of it, they become capable of being acted upon by external powers, and thus the living functions are produced; we ſhall therefore call this property *excitability*, and in uſing this term it is neceſſary to mention, that I mean only to expreſs a fact, without the leaſt intention of pointing out the nature of that property which diſtinguiſhes living from dead matter, and in this we have the example of the great Newton, who called the property which cauſes bodies in certain ſituations to approach each other, *gravitation*, without in the leaſt hinting at its nature; yet, though he knew not what gravitation was, he inveſtigated the laws by which bodies were acted on by it; in the ſame manner, though we are ignorant of excitability, or the nature of that property which diſtinguiſhes living from dead matter, we can inveſtigate the laws by which dead matter acts on living bodies through this medium. We know not wh[illegible]netic attraction is, and yet we [illegible]tigate its laws; the ſame hold[illegible]ith regard to electricity; if [illegible]er ſhould attain a knowledge of t[illegible]ture of this property, it would make no alteration in the laws which we had before diſcovered.

I ſhall now proceed to the inveſtigation of the laws by which the excitability is acted on; but I muſt firſt define ſome terms which it will be neceſſary to uſe, to avoid circumlocution, and at the ſame time to give us more diſtinct ideas on the ſubject.

When the excitability is in ſuch a ſtate as to be very ſuſceptible of the action of external powers, I ſhall call it *abundant*, or *accumulated*; but when it is found not very capable of receiving their action, I ſhall ſay, it is *deficient*, or *exhauſted*. I would not wiſh however, to have it thought, that by theſe terms I mean in the leaſt to hint at the *nature* of excitability, n[illegible]t it is *really* one while increaſe[illegible]t another diminiſhed in quantity; for [illegible] abſtract queſtion is in no ſhape conſi[illegible]d; we know not whether the excitab[illegible] or the vital principle, depends on a particular arrangement of matter, or from whatever cauſe it may originate; by the terms here uſed, I mean only to ſay, that the excitability is eaſily acted on when I call it abundant, or accumulated; at other times the living body is with more difficulty excited, and then I ſay, the vital principle is deficient, or exhauſted.

The laws by which external powers act on living bodies, will, on a careful examination, be found to be the following—

Firſt, when the powerful action of the exciting powers ceaſes for ſome time, the excitability accumulates, or becomes more capable of receiving their action, and is more powerfully affected by them.

If we examine ſeparately the different exciting powers, which act on the body, we ſhall find abundant confirmation of this law. Let us firſt conſider Light; if a perſon be kept in darkneſs for ſome time, and be then brought into a room in which there is only an ordinary degree of light, it will be almoſt too oppreſſive for him, and appear exceſſively bright; and if he have been kept for a conſiderable time in a very dark place; the ſenſation will be very painful. In this caſe, while the retina, or optic nerve, was deprived of light, its excitability accumulated, or became more eaſily affected by light; for if a perſon goes out of one room, into another which has an equal degree of light, he will feel no effect. You may convince yourſelves of this law by a very ſimple experiment—ſhut your eyes, and cover them for a minute or two with your hand, and endeavour not to think of the light, or of what you are doing; then open them, and the day-light will for a ſhort time appear brighter. If you look attentively at a window, for about two minutes, and then caſt your eyes upon a ſheet of white paper, the ſhape of the window-frames will be perfectly viſible upon the paper; thoſe parts which expreſs the wood-work, appearing brighter than the other parts. The parts of the optic nerve on which the image of the frame falls, are covered by the wood-work from the action of the light; the excitability of theſe parts of the nerve will therefore accumulate, and the parts of the paper which fall upon them, muſt of courſe appear brighter. If a perſon be brought out of a dark room where he has been confined, into a field covered with ſnow, when the ſun ſhines, it has been known to affect him ſo much, as to deprive him of ſight altogether.

Let us next conſider what happens with reſpect to heat; if heat be for ſome time abſtracted, the excitability accumulates, or in other words, if the body be for ſome time expoſed to cold, it is more liable to be affected by heat, afterwards applied; of this alſo you may be convinced by an eaſy experiment—put one of your hands into cold water, and then put both into water which is conſiderably warm; the hand which has been in cold water, will feel much warmer than the other. If you handle ſome ſnow with one hand, while you keep the other in your boſom, that it may be of the ſame heat as the body, then bring both within the ſame diſtance of the fire, the heat will affect the cold hand infinitely more than the warm one. This is a circumſtance of the utmoſt importance, and ought always to be carefully attended to. When a perſon has been expoſed to a ſevere degree of cold for ſome time, he ought to be cautious how he comes near a fire, for his excitability will be ſo much accumulated, that the heat will act violently; often producing a great degree of inflammation, and even ſometimes mortification. We may by the way obſerve, that this is a very common cauſe of chilblains, and other inflammations. When the hands, or any other parts of the body have been expoſed to violent cold, they ought firſt to be put into cold water, or even rubbed with the ſnow, and expoſed to warmth in the gentleſt manner poſſible.

Exactly the ſame takes place with reſpect to food, if a perſon have for ſome time been deprived of food, or have taken it in ſmall quantity, whether it be meat or drink; or if he have taken it of a leſs ſtimulating quality, he will find, that when he returns to his ordinary mode of living, it will have more effect upon him than before he lived abſtemiouſly.

Perſons [illegible] have been ſhut up in a coal-work from the falling in of the pit, and have had nothing to eat for two or three days, have been as much intoxicated by a baſon of broth, as a perſon in common circumſtances with two or three bottles of wine; and we all know that ſpirituous, or vinous liquors affect the head more in the morning, than after dinner.

This circumſtance was particularly evident among the poor ſailors who were in the boat with Captain Bligh after the mutiny. The Captain was ſent by government to convey ſome plants of the bread-fruit tree from Otaheite, to the Weſt Indies; ſoon after he left Otaheite, the crew mutinied, and put the captain and moſt of the officers, with ſome of the men, on board the ſhip's boat, with a very ſhort allowance of proviſions, and particularly of liquors, for they had only ſix quarts of rum, and ſix bottles of wine, for nineteen people, who were driven by ſtorms about th[illegible]uth-ſea, expoſed to wet and cold all the time, for nearly a month; each man was allowed only a tea-ſpoon full of rum a day, but this tea-ſpoon full refreſhed the poor men, benumbed as they were with cold, and faint with hunger, more than twenty times the quantity would have done thoſe who were warm, and well fed; and had it not been for the ſpirit having ſuch power to act upon men in their condition, they never could have outlived the hardſhips they experienced. All theſe facts, and many others which might be brought, eſtabliſh beyond a doubt the truth of the law I have mentioned, namely, that when the powerful action of the exciting powers ceaſes for ſome time, the excitability accumulates, or becomes more capable of receiving their actions.

The ſecond law is, that when the exciting powers have acted with violence, or for a conſiderable time, the excitability becomes exhauſted, or leſs fit to be acted on, and this we ſhall be able to prove by a ſimilar induction. Let us take the effects of light upon the eye; when it has acted violently for ſome time upon the optic nerve, it diminiſhes the excitability of that nerve, and renders it incapable of being affected by a quantity of light that would at other times affect it. When you have been walking out in the ſnow, if you come into your room, you will be ſcarcely able to ſee any thing for ſome minutes. Look ſtedfaſtly at a candle for a minute or two, and you will with difficulty diſcern the letters of a book, which you were before reading diſtinctly; and if you happen to caſt your eyes upon the ſun, you will not ſee any thing diſtinctly for ſome time afterwards.

Let us next conſider the matter of heat: ſuppoſe water to be heated luke-warm, if you put one hand into it, it will feel warm; if you now put the other hand into water, heat[illegible] for inſtance to 120° or 130°, and keep it there ſome time, we will ſay, two minutes, if then you take it out, and put it into the luke-warm water, that water will feel cold, though ſtill it will ſeem warm to the other hand; for, the hand which had been in the heated water, has had its excitability exhauſted by the application of heat. Before you go into a warm bath, the temperature of the air may ſeem warm and agreeable to you, but after you have remained for ſome time in a bath that is rather hot, when you come out, you feel the air uncommonly cool and chilling.

Let us now examine the effects of ſubſtances taken into the ſtomach; and as the effects of ſpirituous, and vinous liquors, are a little more remarkable than food, we ſhall make our obſervations upon them.

A perſon who is unaccuſtomed to drink theſe liquors, will be intoxicated by a quantity that will produce no effect upon one who has been ſome time accuſtomed to take them; and when a perſon has uſed himſelf to theſe ſtimulants for ſome time, the ordinary powers which in common ſupport life, will not have their proper effects upon him, becauſe his excitability has been in ſome meaſure exhauſted by the ſtimulants.

The ſame holds good with reſpect to tobacco and opium; a perſon accuſtomed to take opium will not be affected by a quantity that would completely intoxicate one not uſed to it; becauſe the excitability has been ſo far exhauſted by the uſe of that drug, that it cannot be acted on by a ſmall quantity.

Theſe facts, with innumerable others, which will eaſily ſuggeſt themſelves to you, prove the truth of our ſecond propoſition, namely, that when the exciting powers have acted violently, or for a conſiderable time, the excitability is exhauſted, or leſs fit to be acted on.

This exhauſtion of the excitability, may, however, be either finite, or temporary; we ſee animals, while the exciting powers continue to act, at firſt appear in their greateſt vigour, then gradually decay, and at laſt come into that ſtate, in which, from the long continued action of the exciting powers, the excitability is entirely exhauſted, and death takes place.

We likewiſe ſee plants in the ſpring, while the exciting powers have acted on them, moderately, and for a ſhort time, arrayed in their verdant robes, and adorned with flowers of " many mingling hues ;" but, as the exciting powers which ſupport the life of the plant, continue to be applied, and ſome of them, for inſtance heat, as the ſummer advances become increaſed, they firſt looſe their verdure, then grow brown, and at the end of ſummer ceaſe to live ; becauſe their excitability is exhauſted by the long continued action of the exciting powers ; and this does not happen merely in conſequence of the heat of ſummer decreaſing, for they grow brown and die, even in a greater degree of heat than that which in ſpring made them grow luxuriantly.

Theſe are examples of the finite, or irreparable exhauſtion of the excitability ;

but we find alſo, that it may be exhauſted for a time, and accumulated again. Though the eye has been ſo dazzled by the ſplendour of light, that it cannot ſee an object moderately illuminated, yet, if it be ſhut for ſome time, the excitability of the optic nerve accumulates again, and we are again capable of ſeeing with an ordinary light.

We find, that we are not always equally capable of performing the functions of life. When we have been engaged in any exertion, either mental or corporeal, for ſome hours only, we find ourſelves fatigued, and unfit to purſue our labours much longer; if in this ſtate, ſeveral of the exciting powers, particularly light and noiſe, be withdrawn; and if we are laid in a poſture which does not require much muſcular exertion, we ſoon fall into that ſtate which nature intended for the accumulation of the excitability, and which we call ſleep. In this ſtate, many of the exciting powers cannot act upon us, unleſs applied with ſome violence, for we are inſenſible to their moderate action. A moderate light, or a moderate noiſe, does not affect us, and the power of thinking, which exhauſts the excitability very much, is in a great meaſure ſuſpended. When the action of theſe powers has been ſuſpended for ſix or eight hours, the excitability is again capable of being acted on, and we riſe freſh, and vigorous, and fit to engage in our occupations.

Sleep then, is the method which nature has provided to repair the exhauſted conſtitution, and reſtore the vital energy; without its refreſhing aid, our worn out habits would ſcarcely be able to drag on a few days, or at moſt a few weeks, before the vital ſpring was quite run down; how properly therefore has the great poet of nature called ſleep the chief nouriſher in life's feaſt.—

‘ Sleep, that knits up the ravell’d ſleeve of care,
‘ the death of each day’s life, ſore labour’s bath,
‘ balm of hurt minds, great Nature’s ſecond courſe,
‘ chief nouriſher in life’s feaſt.’

From the internal ſenſations often excited, it is natural to conclude that the nerves of ſenſe are not torpid during ſleep ; but that they are only precluded from the perception of external objects, by the external organs being rendered unfit to tranſmit to them the impulſes of bodies, during the ſuſpenſion of the power of volition ; thus, the eye-lids are cloſed in ſleep, to prevent the impulſe of the light from acting on the optic nerve ; and it is very probable that the drum of the ear is not ſtretched ; it is likewiſe probable that ſomething ſimilar happens to the external apparatus of all our organs of ſenſe, which may make them unfit for their office of perception during ſleep.

The more violently the exciting powers have acted, the ſooner is ſleep brought on ;

on; becauſe the excitability is ſooner exhauſted, and therefore, ſooner requires the means of renewing it; and on the contrary, the more weakly the exciting powers have acted, the leſs is a perſon inclined to ſleep. Inſtances of the firſt are, exceſs of exerciſe, ſtrong liquors, or ſtudy; and of the latter, an under proportion of theſe.

A perſon who has been daily accuſtomed to much exerciſe, whether mental or corporeal, if he omit it, will find little or no inclination to ſleep; he may however be made to ſleep by taking a little diffuſible ſtimulus; for inſtance, a little warm punch, or opium; which act entirely by exhauſting the excitability to that degree which is compatible with ſleep; and when the ſtimulant effect of theſe ſubſtances is over, the perſon ſoon falls into that ſtate.

But though the excitability may have

been ſufficiently exhauſted, and the action of the external powers conſiderably moderated, yet there are ſome things within ourſelves, which ſtimulate violently, and prevent ſleep, ſuch as pain, thirſt, and ſtrong paſſions and emotions of the mind. Theſe all tend to drive away ſleep, but it may be induced, by withdrawing the mind from theſe impreſſions; particularly from uneaſy emotions, and employing it on ſomething which makes a leſs impreſſion; ſleep, in ſuch caſes, is frequently brought on by liſtening to the humming of bees, or the murmuring of a rivulet; by employing the mind on ſubjects which do not require much exertion, nor produce too much commotion; ſuch as counting to a thouſand, or counting drops of water which fall ſlowly.

It ſometimes happens, as has been well obſerved by Dr. Franklin, that an uneaſy heat of the ſkin, from a want of perſpiration, occaſioned by the heat of the bed-cloaths, will prevent ſleep; in this caſe, he recommends a method, which I believe will often ſucceed—namely, to get up and walk about the room 'till you are conſiderably cooled; when you get into bed again, the heat of the ſkin will be diminiſhed, and perſpiration become more free, and you will probably ſleep in a very few minutes.*

By induction we have diſcovered two of the principal laws by which living bodies are governed; the firſt is, that when the ordinary powers which ſupport life have been ſuſpended, or their action leſſened for a time, the excitability, or vital principle accumulates, or becomes more fit to receive their actions; and ſecondly, when theſe powers have been acted upon violently, or for a conſiderable time, the excitability is exhauſted, or becomes leſs fit to receive their actions. There are therefore three ſtates in which living bodies exiſt.—

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* May not the heat, and want of perſpiration, depend on an exhauſted irritability of the ſubcutaneous veſſels, which will be accumulated by the method here recommended?

Firſt, a ſtate of accumulated excitability.

Second, a ſtate of exhauſted excitability.

Third, when it is in ſuch a ſtate as to produce the ſtrongeſt and moſt healthy actions, when acted upon by the external powers.

From what I have ſaid, it muſt appear, that life is a forced ſtate, depending on the action of external powers upon the excitability; and that, by their continued action, if they are properly regulated, the excitability will be gradually and inſenſibly exhauſted; and life will be reſigned into the hands of him who gave it, without a ſtruggle, and without a groan.

We ſee then, that that nature operates in ſupporting the living part of the creation, by laws as ſimple and beautiful as thoſe by which the inanimate world is governed. In the latter we ſee the order and harmony which is obſerved by the planets, and their ſatellities, in their revolution round the great ſource of heat and light.

> ‘——— All combin'd
> ‘ and ruled unerring, by that ſingle power
> ‘ which draws the ſtone projected, to the ground.’

In the animated part of the creation, we obſerve thoſe beautiful phenomena, which are exhibited by an almoſt infinite variety of individuals, all depending upon one ſimple law, the action of the exciting powers on the excitability.

I cannot expreſs my admiration of the

wiſdom of the creator better than in the words of Thompſon.

‘ O unprofuſe magnificence divine!
‘ O wiſdom truly perfect! thus to call
‘ from a few cauſes, ſuch a ſcheme of things;
‘ effects ſo various, beautiful, and great.’

Life then, or thoſe functions which we call living, are the effects of certain exciting powers, acting on the excitability, or property diſtinguiſhing living from dead matter. When thoſe effects, namely, the functions, flow eaſily, pleaſantly, and compleatly, from the action of the exciting powers, they indicate that ſtate which we call Health.

I have detained you a long time on this ſubject, but it is of importance to make you acquainted with theſe laws; for it is from a knowledge of them, that the rules for preſerving health muſt be deduced; and having rendered them, as I hope, intelligible to you, I ſhall proceed to point out ſuch neceſſary cautions for our conduct, as are eaſily deduced from them; and which, experience confirms; and I ſhall follow an arrangement in the conſideration of the ſubject, which naturally preſents itſelf to us. The chief exciting powers which act upon us are, air and food; theſe I ſhall reſpectively conſider, and afterwards make a few remarks on exerciſe.

The air is the main-ſpring in the animal machine; the ſource of heat and activity, without which our blood would ſoon become a black and ſtagnant maſs, and life would ſoon ſtop.

It is now known, that only a part of atmoſpheric air, is neceſſary for reſpiration: the atmoſphere near the ſurface of the earth, conſiſts of two kinds of air; one, which is highly proper for reſpiration, and combuſtion, and in which, an animal immerſed, will live much longer than in the ſame quantity of common air; and one, which is perfectly improper for ſupporting reſpiration, or combuſtion for an inſtant.

The firſt of theſe airs, has been called vital air, from its property of ſupporting life, and conſtitutes about one fourth of the atmoſphere.* The other, from its property of deſtroying life, is called azote, and forms of courſe the remaining three fourths of the atmoſphere.

Theſe two airs may be ſeparated from each other by various methods. If a candle be incloſed in a given quantity of atmoſpheric air, it will burn only for a certain time, and then be extinguiſhed; and from the riſing up of the water in the veſſel in which it is incloſed, it is evident that a quantity of air has been abſorbed. What has been abſorbed is the vital air, and what remains, the azote; which is incapable of ſupporting flame. If an animal be immerſed in a given quantity of common air, it will only live a certain time; at the end of this time, the air will be found diminſhed, about one fourth being extracted from it, and the remainder will neither ſupport flame nor animal life; this experiment might eaſily be made, but it ſeems a piece of unneceſſary cruelty.

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* Oxygen gas, according to the new Nomenclature.

By ſimilar experiments to thoſe I have mentioned, we get the azote pure; here is ſome, in which a candle has burnt out, and in which nothing but azote, or the impure part of the atmoſphere is left*. I ſhall plunge a lighted match into it, and you ſee it is inſtantly extinguiſhed.

Many metals, and particularly manganeſe, when expoſed to the atmoſphere,

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* The fixed air, or carbonic acid gas, formed during the combuſtion, having been ſeparated by agitation in contact with lime water.

phere, attract the vital air from it, without touching the azote; and it may be procured from theſe metals by the application of heat, in very great purity. Here is a bottle of that kind of air, which I have expelled by heat from manganeſe; I ſhall plunge a taper into it, and you will perceive that it burns with great brilliancy. An animal ſhut up in it, would live about four times as long as if ſhut up in an equal quantity of atmoſpheric air.

If I take three parts of azote, and one of vital air, I ſhall form a compound which is ſimilar to the atmoſphere, and which is the mixture beſt ſuited to ſupport the health of the body; for if there were a much greater proportion of vital air, it would act too powerfully upon the ſyſtem, and bring on inflammatory diſeaſes; it would likewiſe by its ſtimulus exhauſt the excitability, and bring us ſooner to death; and in the ſame manner that a candle burns brighter in vital air, and would therefore be ſooner extinguiſhed, ſo would the flame of life be ſooner burnt out.

On the contrary, if the atmoſphere contained a much leſs proportion of vital air, it would not ſtimulate the body ſufficiently; the excitability would morbidly accumulate, and diſeaſes of debility would occur.

Combuſtion, putrefaction, and the breathing of animals, are proceſſes which are continually diminiſhing the quantity of vital air contained in the atmoſphere; and if the all-wiſe author of nature had not provided for its continual re-production, the atmoſphere would in all probability have long ſince become too impure to ſupport life; but this is guarded againſt in a moſt beautiful manner.

Water is not a ſimple element, as has been ſuppoſed, but is compoſed of vital air, and a particular kind of air which is called inflammable; the ſame that is uſed to fill balloons. It has been found by experiment, than one hundred pounds of water, are compoſed of eighty-five pounds of vital-air, and fifteen of inflammable air.*

Water may be decompounded by a variety of means, and its component parts ſeparated from each other.

Vegetables effect this decompoſition; they abſorb water, and decompoſe it in their glands; and taking the inflammable air for their nouriſhment, breathe out the vital air in a ſtate of very great purity; this may be aſcertained by a very eaſy experiment.

This vital air is received by animals into their lungs, gives them their heat, and communicates a red colour to their blood; when animals die for want of vital air, their blood is always found black.

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* Strictly ſpeaking, water is compoſed of the baſes of theſe airs, the greateſt part of the caloric being given out on their union.

From what I have ſaid, it is evident, that in large and populous towns, where combuſtion and reſpiration are continually performed on a large ſcale, the air muſt be much leſs pure than in the country, where there are few of theſe cauſes to contaminate the atmoſphere, and where vegetables are continually tending to render it more pure; and if it was not for the winds which agitate this element, and continually occaſion its change of place; the air of large towns would probably ſoon become unfit for reſpiration. Winds bring us the pure air of the country, and take away that from which the vital air has been in a great meaſure extracted; but ſtill, from the immenſe quantity of fuel which is daily burnt, and the number of people breathing in large towns, the air very ſoon becomes impure.

From the greater purity of the air in the country, proceeds the roſy bloom found in the rural cottage, which we in vain look for in the ſtately palace, or the ſplendid drawing room. Here then are reaſons for preferring the country, which no one will diſpute; and whenever it can be done, ſuch a ſituation ought always to be choſen in preference to a large town; this cannot be better enforced than in the words of Dr. Armſtrong.—

'Ye, who amid the feveriſh world would wear
'a body free of pain, of cares a mind;
'fly the rank city, ſhun its turbid air;
'breathe not the chaos of eternal ſmoke,
'and volatile corruption, from the dead,
'the dying, ſick'ning, and the living world
'exhaled, to ſully heaven's tranſparent dome
'with dim mortality.

'While yet you breathe, away; the rural wilds
'invite; the mountains call you, and the vales;
'the woods, the ſtreams, and each ambroſial breeze
'that fans the ever undulating ſky.'

But there are many whoſe occupations oblige them to reſide in large towns; they, therefore ſhould make frequent excurſions into the country, or to ſuch ſituations as will enable them to enjoy, and to breathe air of a little more purity. I ſay *enjoy*, for who that has been for ſome time ſhut up in the town, without breathing the pure air of the country, does not feel his ſpirits revived the moment he emerges from the azote of the town. Let not therefore, if poſſible, a ſingle day paſs, without enjoying, if but for an hour, the pure air of the country. Doing this, only for a ſhort time *every* day, would be much more effectual than ſpending whole days, or even weeks in the country, and then returning into the corrupt atmoſphere of the town; for when you have for a long time breathed an impure air, the excitability becomes ſo morbidly accumulated, from the want of the ſtimulus of pure air, that the air of the country will have too great an effect upon you; it will frequently

quently, in the courſe of a day or two, bring on an inflammatory fever, attended with ſtuffing of the noſe, hoarſeneſs, a great degree of heat, and dryneſs of the ſkin, with other ſymptoms of a violent cold.

Large towns are the graves of the human ſpecies; they would periſh in a few generations, if not conſtantly recruited from the country. The confined, putrid air, which moſt of their inhabitants breathe, their want of natural exerciſe, but above all their diſſipation, ſhorten their lives, and ruin their conſtitutions.

Children particularly, require a pure air, every circumſtance points out the country as the proper place for the education of children; the purity of the air, the variety of ruſtic ſports, the plainneſs of diet, the ſimplicity and innocence of manners, all concur to recommend it. It is a melancholy fact, that above half the children born in London, die before they are two years old.

To ſhew how indiſpenſable freſh air is to children, I ſhall mention one example which ſets the fact in the cleareſt light. In the lying-in hoſpital at Dublin, 2944 infants, out of 7650, died in the year 1782, within the firſt fortnight after their birth, which is nearly every third child; they almoſt all died in convulſions; many of them foamed at the mouth, their thumbs were drawn into the palms of their hands, their jaws were locked, the face was ſwelled and looked blue, as though they were choaked. This laſt circumſtance led the phyſicians to conclude that the rooms in the hoſpital were too cloſe, and hence, that the infants had not a ſufficient quantity of good air to breathe; they therefore ſet about ventilating them better, which was done very compleatly. The conſequence has been, that not one child dies now where three uſed to die.

Fewer children indeed die convulſed now, than formerly; this is becauſe the rich learn, either from books, or converſation with phyſicians, how neceſſary freſh air is to life and health; hence they keep their houſes well aired; but the poor, and ſervants, are not made to comprehend this matter properly; and therefore from neglecting to open their windows, and breathing a foul, tainted air, the greateſt part of their time, many diſorders are brought on, and others rendered worſe than they naturally would be. *

Having

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* Where manufactures are carried on to a great extent, the air is rendered ſtill worſe, and every precaution ought to be uſed to preſerve the health of the inhabitants. Places where manufactures are carried on, ought, therefore, to be conſtructed in ſuch a manner as to be very lofty, and capable of being eaſily ventilated. Night working is undoubtedly a perverſion of the laws of nature, renders the conſtitution feeble, and lays a foundation for bad health and diſeaſe: for it not only gives no time for ventilation, and in conſequence the quantity of oxygen becomes more and more exhauſted, but the number of candles uſed, contributes

Having conſidered the purity of the air, let us next take a view of the changes in temperature which it undergoes, and the effects which theſe have upon the conſtitution.

We find the air ſometimes conſiderably below the freezing point ; nay, even ſo much as 20 or 30 degrees ; it is then intenſely cold ; and on the other hand, it ſometimes riſes to a great degree of heat. We then find ourſelves much relaxed, and our conſtitutions exhauſted.

To underſtand how this happens, let us conſider for a moment the nature of heat, and cold.—Heat is one of thoſe ſtimuli which act upon the excitability,

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very much to contaminate the air. It has been found by experiment that a candle contaminates more air than a man. By perſons who are intereſted in the welfare of the ſucceeding generation, night-work will never be urged, and it will be right to ventilate the manufactories every night, as well as during breakfaſt and dinner.

and ſupport life : for if it was totally withdrawn, we ſhould not be able to exiſt even a few minutes; and cold, is only a diminution of heat. When heat is preſent, in a proper degree, or the atmoſphere is about that degree of heat which we call temperate, it juſt gives ſuch a degree of ſtimulus, and keeps the excitability exhauſted to ſuch a degree, as to preſerve the body in health ; but if it continue for a conſiderable time to be much warmer than this temperature, the conſequence muſt be, from the laws already laid down, an exhauſtion of the excitability, and a conſequent relaxation and debility ; for, when the excitability has been exhauſted by the violent application of heat, long continued, the common ſtimulant powers which ſupport life, cannot produce a ſufficient effect upon it, to give to the body that tone which is compatible with health. On the contrary, when the heat of the air falls below what we call temperate, or when cold is applied to the body, from the accuſtomed ſtimulus of heat being diminiſhed, the excitability muſt accumulate, or become more liable to be affected by the action of the external powers.

This, however, very ſeldom produces bad effects, unleſs the exciting powers be improperly or quickly applied; for we can bear a conſiderable diminution of heat without any bad conſequences; and in all caſes I hope I ſhall be able to make it appear, that much more miſchief ariſes from the too great action of heat, than from the diminution of it. Nature never made any country too cold for its inhabitants. In cold climates, ſhe has made exerciſe, and even fatigue habitual to them, not only from the neceſſity of their ſituation, but from choice, their natural diverſions being all of the athletic or violent kind. But the ſoftneſs and effeminacy of modern manners, has both deprived us of our natural defence againſt the diſeaſes moſt incident to our climate, and ſubjected us to all the inconveniencies of a warm one.

People are afraid of going out into the cold air; but if they conduct themſelves properly afterwards, they will never be in the leaſt danger from it. Indeed the action of cold, unleſs it be exceſſive, never produces any bad effects.

Many of you will, no doubt, think me here in an error; but I hope you will not long entertain that opinion. You will ſay that you have had frequent experience to the contrary; that you have often gone out into the cold air, and have caught dreadful colds. That this is owing to the action of cold, I will deny; nay, I will aſſert, that if a perſon go out into air which is very cold, *and remain in it* for a very long time, he will never perceive any ſymptoms of what is called a cold ſo long as he remains there.

A common cold is attended with a running of the noſe, hoarſeneſs, and cough, with a conſiderable degree of feveriſh heat, and dryneſs of the ſkin.— Now it is univerſally agreed, that this diſorder is an inflammation, or is of an inflammatory nature; it is an inflammation of the ſmooth, moiſt ſkin which lines the noſtrils, and goes down the wind-pipe into the lungs; but as cold is only a diminution of heat, or a diminution of a ſtimulus acting upon the body, it is impoſſible that ſuch a diminution can cauſe a greater action or excitement; we might as well expect to fill a veſſel by taking water out of it. But let us ſee how a cold, as it is commonly called, is uſually produced. When a perſon in cold weather goes out into the air, every time he draws in his breath, the cold air paſſes through his noſtrils and windpipe into the lungs, and in thus diminiſhing the heat of the parts, allows their excitability to accumulate, and renders them more liable to be affected by the ſucceeding heat. So long as that perſon continues in the cold air, he feels no bad effects; but if he come into a warm room, he firſt perceives a glow within his noſtrils and breaſt, as well as all over the ſurface of the body. Soon afterwards, a diſagreeable dryneſs and huſkineſs will be felt in the noſtrils and breaſt. By and by a ſhort, dry, tickling cough comes on. He feels a ſhivering, which makes him draw nearer to the fire, but all to no purpoſe; the more he tries to heat himſelf, the more chill he becomes. All the miſchief is here cauſed by the violent action of the heat on the accumulated excitability. For want of a knowledge of this law, theſe diſagreeable, and often dangerous complaints are brought on; when they might be avoided with the greateſt eaſe.

When you take a ride into the country on a cold day, you find yourſelves very cold; as ſoon as you go into a houſe, you are invited to come to the fire, and warm yourſelves; and what is ſtill worſe, to drink ſomething warm and comfortable, to keep out the cold, as the ſaying is. The inevitable conſequence of this, is, to bring on the complaints which I have juſt deſcribed, which might with more propriety, be called heats than colds. But how eaſily might theſe complaints have been avoided! When you come out of a very cold atmoſphere, you ſhould not at firſt go into a room that has a fire in it, or if you cannot avoid that, you ſhould keep for a conſiderable time at as great a diſtance from the fire as poſſible, that the accumulated excitability may be gradually exhauſted, by the moderate and gentle action of heat; and then you may bear the heat of the fire without any danger: but, above all, refrain from taking warm or ſtrong liquors while you are cold. If a perſon have his hands or feet expoſed to a very ſevere cold, the excitability of thoſe parts will be ſo much accumulated, that if they ſhould be brought ſuddenly near the fire, a violent inflammation, and even a mortification will take place, which has often happened ; or, at any rate, that inflammation called Chilblains will be produced, from the violent action of the heat upon the accumulated excitability of thoſe parts ; but, if a perſon ſo circumſtanced, was to put his hands or feet into cold water, very little warmer than the atmoſphere to which he had been expoſed, or rub them with ſnow, which is not often colder than 32 or 30 degrees, the morbid excitability will be gradually exhauſted, and no bad conſequences will enſue.

When a part of the body only has been expoſed to the action of cold, and the reſt kept heated, if, for inſtance, a perſon in a warm room ſits ſo that a current of air coming through a broken pane, ſhould fall upon any part of the body, that part would be ſoon affected with an inflammation, which is uſually called a rheumatic inflammation.

From what has been ſaid, it will be eaſy to account for this circumſtance. The excitability of the part is accumulated by the diminution of its heat; but at the ſame time, the reſt of the body and blood is warm; and this warm blood acting upon a part where the excitability is accumulated, will cauſe an inflammation; to which, the more you apply heat, the worſe you make it.—From theſe conſiderations, we may lay it down as a fact, and experience ſupports us in ſo doing, that you may in general go out of warm into cold air without much danger; but, that you can never return ſuddenly from the cold into the warm air with perfect impunity.

Hence, we may lay down the following rule, which, if ſtrictly obſerved, would prevent the frequent colds we meet with in winter. *When the whole body, or any part of it, is chilled, bring it to its natural feeling and warmth by degrees.*

But if, for want of obſerving this neceſſary caution, a cold, as it is called, ſhould have ſeized a perſon, let us conſider what is proper to be done.

It will, from the preceding reaſoning, appear very improper to make the room where you ſit warmer than uſual, to encreaſe the quantity of bed-cloaths, to wrap yourſelf up in flannel, or particularly to drink a large quantity of barley-water, gruel, or tea, almoſt boiling hot, by way of diluting, as it is called, and forcing a perſpiration; this will infalliably make the diſorder worſe, in the ſame manner as confining inoculated perſons in warm rooms would make their ſmall-pox more violent.

Perhaps there would be ſcarcely ſuch a thing as a bad cold, if people, when they found it coming on, were to keep cool, and avoid wine and ſtrong liquors, and confine themſelves for a ſhort time to a ſimple diet of vegetable food, drinking only toaſt and water. Inſtances are by no means uncommon, where a heat of the noſtrils, difficulty of breathing, a ſhort, tickling cough, and other ſymptoms, threatening a violent cold, have gone off entirely in conſequence of this plan being purſued.

Colds would be much leſs frequent, were we to take more pains to accommodate our dreſs to the ſeaſon: if we were warmly cloathed in cold weather, our excitability would not be accumulated by the action of the cold. If a greater proportion of females fall victims to this diſeaſe, is it not becauſe, loſing ſight, more than men, of its primary purpoſe, they regulate their dreſs ſolely by fantaſtic ideas of elegance? If happily, as is obſerved by Dr. Beddoes, our regret ſhould recall the age of chivalry, to break the ſpell of faſhion would be an atchievement worthy the moſt gallant of our future Knights. Common ſenſe has always failed in the adventure; and our ladies, alas! are ſtill compelled, whenever the enchantreſs waves her wand, to expoſe themſelves half undreſſed, to the fogs and froſts of our iſland.

Beſides the effects of the air, we ought by no means to be indifferent with regard to what we take into the ſtomach as food and drink; ſince theſe have even a greater influence on our health, than the circumſtances I have already mentioned. Among the cauſes which excite the body, and ſupport life, I have formerly mentioned food, or the matters taken into the ſtomach. It is from theſe matters that all the animal ſolids and fluids are formed; theſe are ſtimuli, which if totally withdrawn, we could not exiſt many days. Theſe ſtimuli are ſubject to the ſame laws with all the others which act upon the body. When they act properly in concert with the other powers, they produce the healthy ſtate; but if they act in an undue degree, whether that action be too great or too little, diſeaſe will be the conſequence. When they act too feebly, the excitability will accumulate; and diſeaſes of debility, attended with a very great degree of irritability, will take place: this has been inſtanced in thoſe who have been without food for ſome time. Perſons who have been ſhut up in a coal-work by the falling-in of the pit, and have conſequently been without food for ſome days, have had their excitability ſo much accumulated, as to be toxicated with a baſon of broth.

To this ſource we may attribute many of the diſeaſes with which the poor are afflicted; but they are by no means ſo common as diſeaſes of an oppoſite nature, which ariſe from a too free uſe of food. I ſhall confine myſelf here to the conſideration of what is more ſtrictly called food, and afterwards conſider the effects of ſtrong liquors.

When we take food in too great quantity, or of too nouriſhing a quality, it will either produce inflammatory diſeaſes, ſuch as pleuriſy, or by exhauſting the excitability, it will bring on ſtomach complaints, gout, and all the ſymptoms of premature old age. This follows ſo evidently from the laws we have inveſtigated, that it is ſcarcely neceſſary to ſay more on the ſubject; and I am ſure there are few who have not ſeen examples of it.

Be therefore temperate in eating, and eat only of ſuch foods as are the plaineſt; and let a proper quantity of vegetable food be mixed with animal. If you value the preſervation of health, never ſatiate yourſelves with eating; but let it be a rule from which you ought never to depart, always to riſe from table with ſome remains of appetite: for, when the ſtomach is loaded with more food than it can eaſily digeſt, a crude and unaſſimilated chyle is taken into the blood, pregnant with diſeaſes. Nor is the quantity the only object of attention; the quality of the food is to be carefully ſtudied; made diſhes, enriched with hot ſauces, ſtimulate infinitely more than plain food, and therefore exhauſt the excitability, bringing on diſeaſes of indirect debility; ſuch as the worſt kind of gout, apoplexy, and paralytic complaints. "For my part," ſays an elegant writer, "when I behold a faſhionable table ſet out in all its magnificence, I fancy that I ſee gouts and dropſies, fevers and lethargies, with other innumerable diſtempers, lying in ambuſcade among the diſhes." Let it be therefore laid down as a rule by thoſe who wiſh to preſerve their health, and I have nothing to ſay to thoſe who are indifferent on that head, to make their chief repaſt on one plain diſh, and trifle with the reſt.

It is by no means uncommon for a medical man to have patients, chiefly among people of faſhion and fortune, who complain of being hot and reſtleſs all night, and having a foul taſte in the mouth every morning: on examination it is found, that in nineteen caſes out of twenty, it has ariſen from their having overloaded their ſtomachs, and at the ſame time neglected to take proper exerciſe; for it muſt always be obſerved, that more may be eaten with ſafety, nay, more is even neceſſary, when a perſon takes a good deal of exerciſe.

When people take little exerciſe, and overload their ſtomachs, there lies within them a fermenting maſs of undigeſted aliment; and it is not ſurprizing that this ſhould irritate and heat the body during the night. This is likewiſe the foundation of ſtomach complaints, flatulencies, and all other ſymptoms of indigeſtion; which more frequently proceed from intemperance in eating and drinking than any other cauſe. The benefits ariſing from temperance are ſet in a ſtriking light in the following allegory, which may be found in the adventurer.

Eſculapius,

Æſculapius, after his deification or admittance among the Gods, having reviſited his native country, and being one day (as curioſity led him a rambling,) in danger of being benighted, made the beſt of his way to a houſe he ſaw at ſome diſtance, where he was hoſpitably received by the maſter of it. Cremes, for that was the maſter's name, though but a young man, was infirm and ſickly. Of ſeveral diſhes ſerved up to ſupper, Cremes obſerved that his gueſt ate but of one, and that the moſt ſimple; nor could all his intreaties prevail upon him to do otherwiſe. He was, notwithſtanding, highly delighted with Æſculapius's converſation, in which he obſerved a cheerfulneſs and knowledge ſuperior to any thing he had hitherto met with.

The next morning, Æſculapius took his leave, but not till he had engaged his good-natured hoſt to pay him a viſit at a ſmall villa, a few miles from thence. Cremes came accordingly, and was moſt kindly received ; but how great was his amazement when ſupper was ſerved up, to ſee nothing but milk, honey, and a few roots, dreſſed in the plaineſt, but neateſt manner, to which hunger, cheerfulneſs, and good ſenſe, were the only ſauces. Eſculapius ſeemed to eat with pleaſure, while Cremes ſcarcely taſted of them. On which a repaſt was ordered more ſuitable to the taſte of our gueſt. Immediately there ſucceeded a banquet compoſed of the moſt artful diſhes that luxury could invent, with great plenty and variety of the richeſt and moſt intoxicating wines. Theſe too were accompanied by damſels of the moſt bewitching beauty. Cremes now gave a looſe to his appetites, and every thing he taſted raiſed exſtaſies beyond what he had ever known. During the repaſt, the damſels ſung and danced to entertain them ; their charms enchanted the enraptured gueſt, already fluſhed with what he had drank ; his ſenſes were loſt in exſtatic confuſion. Every thing around him ſeemed Elyſium, and he was on the point of indulging the moſt boundleſs. freedoms, when on a ſudden their beauty, which was but a vizard, fell off, and diſcovered forms the moſt hideous and forbidding imaginable. Luſt, revenge, folly, murder, meagre poverty, and deſpair, now appeared in the moſt odious ſhapes, and the place inſtantly became a moſt dire ſcene of miſery and confuſion. How often did Cremes wiſh himſelf far diſtant from ſuch a diabolical company, and now dreaded the fatal conſequence which threatened him. His blood ran chill at his heart, and joy and rapture were perverted to amazement and horror !—When Eſculapius perceived it had made a ſufficient impreſſion on his gueſt, he thus addreſſed him : " Know, Cremes, it is Eſculapius who has thus entertained you, and what you have beheld is a true image of the deceitfulneſs and miſery inſeparable from luxury and intemperance. Would you be happy, be temperate : temperance is the parent of health, virtue, wiſdom, plenty, and every thing that can make you happy in this or the world to come. It is indeed the true luxury of life, for without it life cannot be enjoyed." This ſaid, he diſappeared, and left Cremes (inſtead of an elegant apartment) in an open plain, full of ideas quite different from thoſe he had brought with him.

On his return home, from the moſt luxurious, he became one of the moſt temperate men, by which wiſe method he ſoon regained health. Frugality produced riches, and from an infirm and crazy conſtitution, and almoſt ruined eſtate, by virtue of this infallible elixir, he became one of the happieſt men breathing, and lived to a healthy old age, revered as an oracle for his wiſdom throughout all Greece.

If temperance be neceſſary with regard to food, it is ſtill more ſo with reſpect to ſtrong liquors; theſe diffuſible ſtimuli, by quickly exhauſting the excitability, ſoon blaſt the vigour, and ſap the foundation of the ſtrongeſt conſtitution. Their immediate effects you know are ſtimulant; they raiſe the animal ſpirits, produce a cheerful ſtate of mind, and if taken in greater quantity, cauſe intoxication, or that temporary derangement of the thinking powers which ariſes from too great a degree of excitement: but let us ſee what happens the next day; the animal ſpirits are exhauſted, and the perſon thus ſituated, finds himſelf languid and enervated to a great degree; for it ſeems a law of the human body, that the ſpirits are never artificially raiſed, without being afterwards proportionably depreſſed; and to ſhew clearly that in this ſtate the excitability is exhauſted, the ordinary powers which in general ſupport life, will not have their due effect; and a perſon thus ſituated finds moſt relief the next day, from taking ſome of the ſame ſtimulus which occaſioned the exhauſtion; becauſe the common exciting powers can ſcarcely act upon his exhauſted excitability.

But though the excitability be in this way exhauſted, it will in the courſe of a day or two be again accumulated, and it may, perhaps, be ſuſpected that this exhauſtion can do no harm at all to the conſtitution; but this is a premature concluſion, and quite contrary to fact and experience, as well as to reaſon; for, juſt in the ſame manner that a pendulum, made to vibrate in the arc of a circle, will never return exactly to the ſame height, but fall a little ſhort of it every time; ſo, though the excitability may be again accumulated, it never can be brought back to what it was before; and every freſh debauch will ſhorten life, probably two or three weeks at leaſt, beſides debilitating the body, and bringing on a variety of diſeaſes, with premature old age.

Thoſe who drink only a moderate quantity of wine, ſo as to make them cheerful, as they call it, but not abſolutely to intoxicate, may imagine that it will do them no harm. The ſtrong and robuſt may enjoy the pleaſures of the bottle and table with ſeeming impunity, and ſometimes for many years, may not find any bad effects from them; but depend upon it, if a full diet of animal food be every day indulged in, with only a moderate portion of wine, its baneful influence will blaſt the vigour of the ſtrongeſt conſtitution.

While we are eating, water is the beſt beverage. The cuſtom of drinking fermented liquors, and particularly wine, during dinner, is a very pernicious one. The idea that it aſſiſts digeſtion, is falſe; thoſe who are acquainted with chemiſtry know, that food is hardened, and rendered leſs digeſtible by theſe means, and the ſtimulus which wine gives to the ſtomach is not neceſſary, excepting to thoſe [illegible] will have exhauſted the excitability of that organ by the exceſſive uſe of ſtrong liquors. In fact, the ſtomach can ſcarcely be excited to any action without the aſſiſtance of ſuch a ſtimulus. If you want diluting, water is the beſt diluent, and will prevent the [illegible], as it is called, of ſtrong drink, much better than wine or ſpirits.

Before I finiſh this ſubject, I ſhall ſay a few words on the pernicious cuſtom of ſuffering children to drink wine, or other fermented liquors. Nothing is more common than to ſee, even very young children come to the table after dinner, to drink a glaſs of wine. The leaſt quantity produces violent effects on their accumulated excitability, and by quickly exhauſting it, ruins their conſtitutions through life, and often renders them habitual drinkers.

I can ſcarcely help attributing in ſome degree the many ſtomach complaints we meet with, among young people in the preſent age, and which were unknown to our forefathers, to the abominable practice of ſuffering children to drink fermented, or ſpirituous liquors. You muſt all have obſerved how ſoon children are intoxicated and inflamed by ſpirituous liquors; you may judge then, that if theſe liquors be only a ſlow poiſon to us, they are a very quick one to them. A glaſs of wine, on account of the accumulated excitability of children, will have more effect upon them, than a bottle will have upon an adult accuſtomed to drink wine. If therefore, the health of a child, and its happineſs through life be an object, never ſuffer it to taſte fermented, or ſpirituous liquors, till it be fifteen or ſixteen years of age, unleſs a little wine be neceſſary as a medicine.

It now only remains for me to take ſome notice of exerciſe. Of all the various methods of preſerving health, and of preventing diſeaſes, which nature has ſuggeſted, there is none more efficacious than exerciſe, it puts the fluids all in motion, ſtrengthens the ſolids, promotes perſpiration, and occaſions the decompoſition of a larger quantity of atmoſpheric air in the lungs. Hence, in order to preſerve the health of the body, the author of nature has made exerciſe abſolutely neceſſary to the greater part of mankind for obtaining the means of exiſtence.—Had not exerciſe been abſolutely neceſſary for our well-being ſays the elegant Addiſon, nature would not have made the body ſo proper for it, by giving ſuch an activity to the limbs, and ſuch a pliancy to every part, as neceſſarily produce thoſe compreſſions, extenſions, contortions, dilatations, and all other kinds of motions that are neceſſary for the preſervation of ſuch a ſyſtem of tubes and glands.—And that we might not want inducement to engage us in ſuch exerciſe of the body as is proper for its welfare, it is ſo ordered, that nothing valuable can be procured without it. Not to mention riches and honors, even food and raiment are not to be come at without the toil of the hands and ſweat of the brow. Providence furniſhes materials, but expects that we ſhould work them up ourſelves. The earth muſt be laboured before it gives its increaſe, and when it is forced into its ſeveral products, how many hands muſt they paſs through before they are fit for uſe? Manufactures, trade, and agriculture, naturally employ more than nineteen parts of the ſpecies out of twenty; and as for thoſe who are not obliged to labour by the condition in which they are born, they are more miſerable than the reſt of mankind, unleſs they indulge themſelves in that voluntary labour which goes by the name of exerciſe.

Of all the different kinds of exerciſe, there is none that conduces ſo much to health as riding; it is not attended with the fatigue of walking, and the free air is more enjoyed in this way than by any other mode of exerciſe. Where it cannot be uſed, walking, or exerciſe in a carriage, ought to be ſubſtituted.

The beſt time for taking exerciſe is before dinner, for the body is then more vigorous and alert, and the mind more cheerful, and better diſpoſed to enjoy the pleaſure of a ride or walk. Exerciſe after a full meal diſturbs digeſtion, and cauſes painful ſenſations in the ſtomach and bowels, with heart burn, and acid eructations.

But whatever mode of exerciſe you uſe, it ought not at firſt to be too violent. Dr. Armſtrong has given us an excellent rule——

'Begin with gentle toils, and as your nerves
'grow firm, to hardier, by juſt ſteps aſpire.
'The prudent, even in every moderate walk,
'at firſt but ſaunter, and by ſlow degrees
'increaſe their pace.'

ECA·BODLEIAN

THE END.